SRF-D190 UHF RFID Reader User's Manual

Overview

As a long-range stationary radio frequency identification (RFID) reader, the SRF-D190 is a 900MHz (UHF band) UHF RFID reader operable at various operating bands specified by individual countries. It also complies with all standard protocols defined in ISO18000-6C (EPC GEN2).

Relevant equipment

1. SRF-C210: Handheld RFID reader for reading ID on vehicles and objects with a tag to help operators create files in the pre-registration system.
2. SRF-C390: High-sensitivity RFID reader with an ideal sensing range over 20m for use in special environments.
3. SCR-F180: RFID controller automatically resetting and adjusting parameters in the field to increase sensing range and adjust other functions.

Features

- Compact appearance design, built-in antenna and RF module, no need of additional modules or equipment.
- Specially designed antenna pattern suitable for use on vehicles to reduce ineffective identification interference outside of the driveway.
- Compatible with access controller using Wiegand 34 interface.
- RS485 port for connecting the RFID reader or long-distance transmission control equipment.
- Ideal sensing range over 10m.
- Special energy-saving design reduces power consumption.
- Avoid the interference of other radio frequencies with the look-up table frequency-hopping spread spectrum(FHSS)
- Pass R&D patent for EMI reduction in many countries.
- Pass NCC/FCC certification
- Support external sensors and controllers

Points for attention

1. The product pattern is certified by the FCC. Unauthorized modification of the frequency, power, or originally designed functions and characteristics of the RFID reader are prohibited.
2. This product has a water-resistant design. Unauthorized removal of the screws and case of the product will damage the water-resistant performance and void product warranty.
3. Cables are water-resistant. Do not damage the shield, as it will also damage water-resistant performance.
4. The reader should be positioned so that personnel in the area for prolonged periods may safely remain at least 20 cm (8 in) in an uncontrolled environment from the reader's surface.

Recommended uses

- Driveway control and management of residential buildings, buildings, and communities.
- Access control and management for residential buildings, companies, and factories.
- Elevator control and management.
- Logistics related management.

Certification

- NCC ID : CCAM14LP0581T9
- FCC ID : 2ADGD-SRFC190US

Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) this device may not cause harmful interference and

2) this device must accept any interference received, including interference that may cause undesired operation of the device.

RF exposure:

To comply with the FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

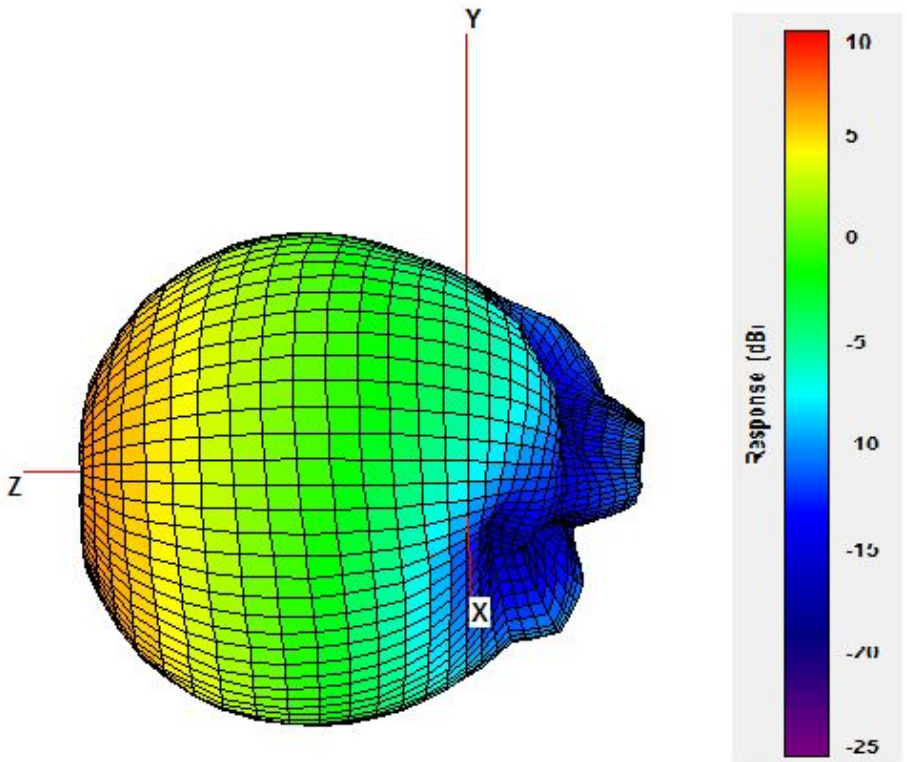
FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

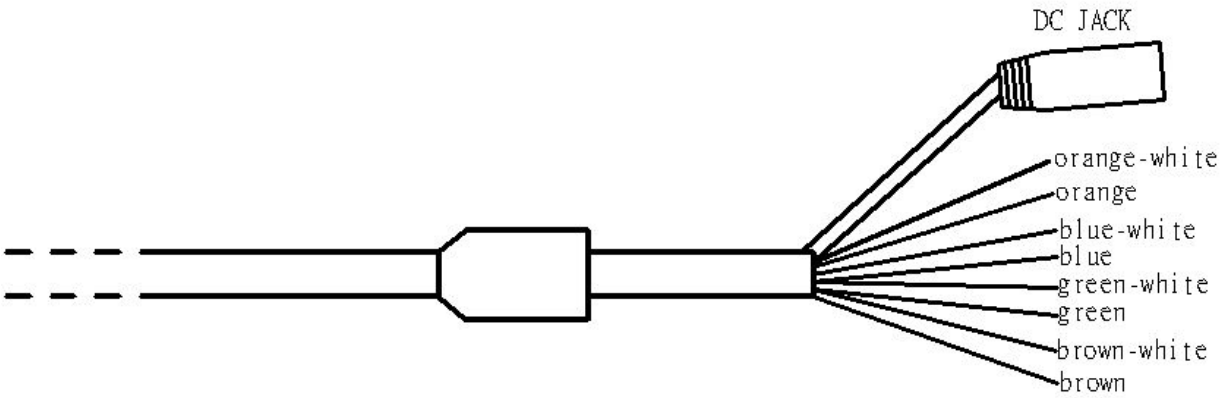
Product Specifications

Input voltage	9-15 V
Antenna gain	7.71 dBi (circular polarization)
Antenna receiving	50 ohm U.FL.
Operating interface	wiegand 34 / RS485
Operating frequency	902-928 MHz
Emission power	27.778 dBm
Modulation scheme	PR-ASK, ASK
Current	<1A (Max)
Protocol	EPC Gen2 (ISO 18000-6C)
Receiving sensitivity	-85 dBm
Sensing range	>10m
Water resistance	IP65
Operating temperature	-20℃ ~ +55 ℃
Storage temperature	-20℃ ~ +85℃
Humidity	5-90%
Dimensions	228x228x49.5mm
Weight	940g

Antenna Pattern



Output Cable Descriptions



Wire Color	Definition	Function	Remarks
Orange-White	D485+	RS485 communication interface	
Orange	D485-		
Blue-White	GND		
Blue	GND		
Green-White	DATA 1	Wiegand communication interface	
Green	DATA 0		
Brown-White	DI	External control signal input	H:3.3V / L : 0V
Brown	DO	Reader control signal output	For use by RS485 only

1. RS485 Communication Interface

1.1. Connect with the computer via RS485 to update the firmware of the RFID reader.
1.2. Connect with access controller with RS485 and control it (two-way operation)
1.3. Connect with and control SCR-F180 to reset environmental parameters and adjust simple functions.
1.4. Connect and communicate with and control equipment with RS485.

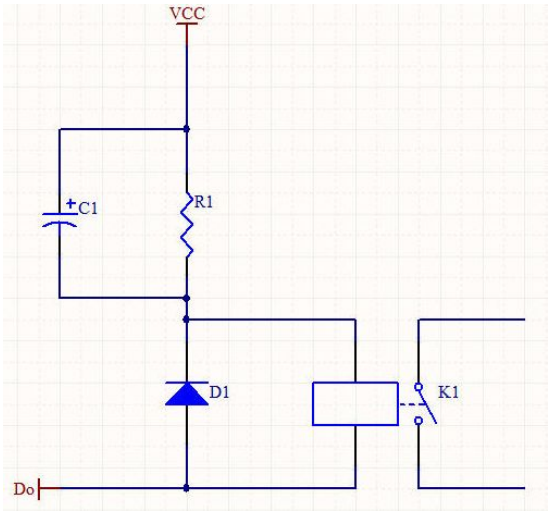
2. Wiegand Communication Interface

2.1. Connect with access controller using Wiegand interface (one-way operation).
2.2. Support only Wiegand 34 interface.

3. DI (external control signal input)

3.1. Signal level defining: High level (H) : 3.3V / Low level (L) : 0V (GND signal)
3.2. When the external control signal input is at high level and the SRF-D190 is in the standby mode, the SRF-D190 will not output any identification code to the back-end access controller.
3.3. When the external control signal input is at low level and the SRF-D190 is in the working mode, the SRF-D190 will output the identification code on the tag to the back-end access controller.
3.4. If DI is not in use, connect it with the blue or blue-white wire.

4. DO (RFID reader control signal output)
4.1. This function must be used with the RS485.
4.2. Wiegand will not output signal.
4.3. Recommended circuit:



4.3.1. K1 is the relay. Select with reference to the electrical characteristics of the external controller.
4.3.2. D1 must select freewheeling diode or fast recovery diode for part protection.
4.3.3. VCC determines voltage based on the selected relay.
4.3.4. R1 determines the activation current based on the selected relay.
4.3.5. C1 over 470uF is recommended.

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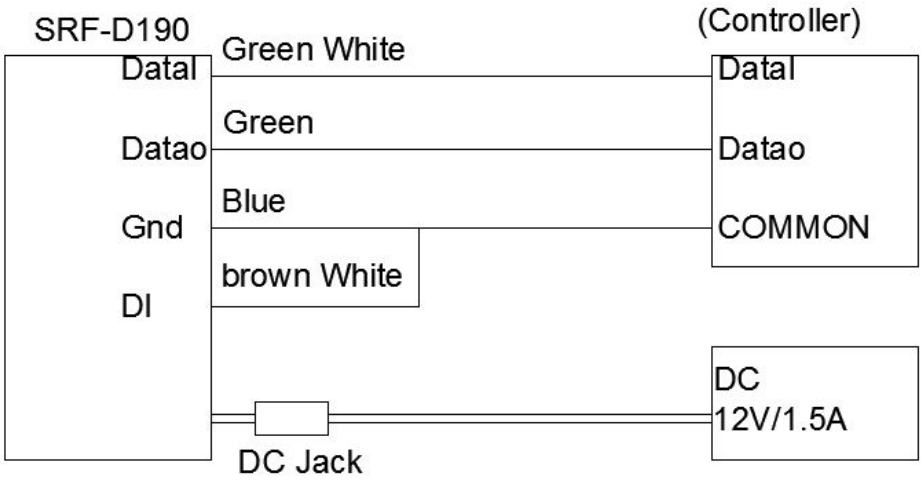
Recommended Installation of SRF-D190 RFID Reader

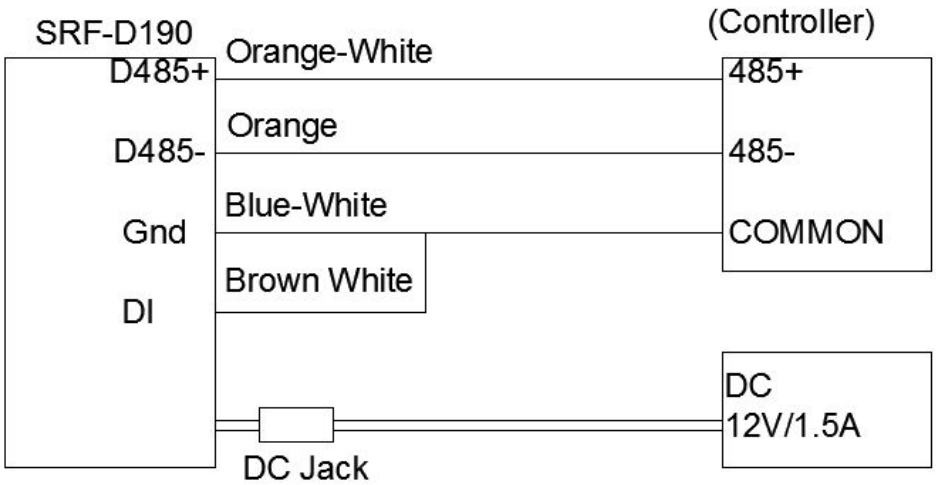
1. Secure the SRF-D190 RFID reader on a column, pedestal, wall, or beam at least 150cm above ground and leave space for adjusting the up and down and left and right angles of the reader.
2. Check the antenna pattern and adjust the support angle for the reader to face the position the tag will pass through.
3. Although the ideal sensing range of SRF-D190 is over 10m, the actual sensing range varies due to weather (raining, fog, sunny) and installation method (horizontal, inclining).
4. Should you have troubles in installing the SRF-D190, please call Szok Energy and Communication Co., Ltd. at (02) 8792-0958.

Connection of SRF-D190 RFID Reader

1. Connect the SRF-D190 to a Wiegand or RS485 signal source based on the communication interface of the access controller.



Basic connection with Wiegand interface



Basic connection with RS485 interface

2. DI (brown-white) is the input signal (e.g. ground induction loop or photo interrupter) controlling the operating mode of the SRF-D190 with external control. If external control is not in use, please connect it with the blue or blue/white wire.
3. DO (reader control signal output) must be used with the RS485 to communicate with the remote program controller. Please call Szok Energy and Communication Co., Ltd. at (02)8792-0958 for program control.

Test

1. Check if the overall function is normal with an access controller, gateway controller, or other controller.
2. Check if the sensing range is normal.
3. If the sensing range is unfavorable, reset and adjust environmental parameters automatically with the SCR-F180 controller to increase sensing range and adjust other functions.
4. Please call Szok Energy and Communication Co., Ltd. for the operation and description of the SCR-F180 controller.

Warranty

1. This product is covered by a one-year warranty from the date of purchase.
2. Warranty covers free inspections and repair of the product to good condition if there are problems or poor product condition.
3. Warranty does not cover product damage due to an act of God (e.g. flood, fire, earthquake, typhoon, thunder strike, etc.).
4. Warranty does not cover willful damage (e.g. scratch, fall, impact, etc.) or damage due to negligence (loss, loosened screws, etc.).
5. Warrant will void if labels on the case are removed or damaged.